

New heart risk from too much coffee?

In recent years, Dutch scientists have shown that the oils in unfiltered coffee can spike concentrations of cholesterol in the blood, offering one explanation for the oft-observed link between heavy consumption of the brew and heart disease (SN: 9/16/95, p. 182). Now, Norwegian scientists have stumbled onto a second risk from drinking too much java—regardless of how it's brewed.

Ottar Nygård of the University of Bergen and his colleagues were studying homocysteine, an amino acid that in high concentrations is known to increase the risk of heart disease (SN: 10/21/95, p.

264). Homocysteine forms during the breakdown of other amino acids but is itself ordinarily broken down by B vitamins in the diet, such as folate, so that toxic excesses don't develop. Certain lifestyle factors, however—especially cigarette smoking and diets low in fruits and vegetables—can foster a buildup of homocysteine in the blood.

Hoping to find the factors underlying this cardiovascular risk, Nygård's team correlated lifestyle data from 16,000 men and women with its measurements of homocysteine in the subjects' blood.

The big surprise, Nygård told SCIENCE

NEWS, was homocysteine's link to coffee. "We found it quite by chance."

As average coffee consumption increased in this group of 40- to 67-year-olds, so did homocysteine in the blood. Moreover, the link appeared independent of any other effect of diet, smoking, exercise, or vitamin supplementation. The additive effect of coffee and smoking may explain why epidemiological studies have frequently shown them to be a "particularly unfavorable" pairing in terms of heart attack risk, Nygård and his colleagues suggest in the January AMERICAN JOURNAL OF CLINICAL NUTRITION.

Only people who regularly chose decaffeinated coffee—less than 2 percent of the coffee drinkers—showed no coffee-homocysteine link. This "may point to a possible influence of caffeine," the researchers say. They found no homocysteine association with tea.

Though even moderate coffee drinking increased homocysteine concentrations, "I don't think there's any health risk with low consumption—one or two cups a day," Nygård says.

Julie R. Palmer, an epidemiologist at Boston University's School of Public Health in Brookline, Mass., says the Norwegian study "is interesting because the association between coffee and coronary heart disease that's been observed in so many studies hasn't been satisfactorily explained in terms of mechanism."

A study she published 2 years ago found that heart attack risk climbed with coffee consumption in a group of more than 1,700 women, most of them postmenopausal. Those regularly drinking 10 cups per day were 2.5 times as likely to suffer a heart attack as those averaging less than one cup.

However, she believes even the new data indicate "there's nothing to worry about for fewer than five cups per day."

Meir J. Stampfer also finds the Norwegian results interesting. An epidemiologist at the Harvard School of Public Health in Boston, he and others have found homocysteine to be a potent cardiovascular risk factor, but he says the new results "shouldn't be seen as casting coffee in a bad light." Filtered coffee's risk to health was resolved by earlier experiments, he states: "There is none," at least in the quantities typically drunk.

Nygård acknowledges that "in the United States, they have had trouble finding any harmful effect of coffee," despite the strong link seen in Scandinavia. He speculates that "the difference may be explained by vitamin intake." If U.S. coffee drinkers eat enough folate and B vitamins, which Scandinavians probably do not, "their diet may offset any risks posed by coffee."

So the solution for coffee lovers may prove as simple as supplementing their diet with B vitamins. However, Nygård cautions, "we don't know that yet."

— J. Raloff

Earth's poles feel warmth of the full moon

Romantic souls who bathe themselves in lunar light run little risk of developing a moonburn. Yet the full moon is strong enough to alter weather on Earth, according to a study of daily temperatures over the last 17 years.

Satellite measurements of air temperature in the lower atmosphere reveal that the polar regions are 0.55°C warmer during a full moon than during a new moon, report John A. Shaffer, Randall S. Cerveny, and Robert C. Balling Jr. of Arizona State University in Tempe. The moon has no appreciable effect on tropical temperatures, note the researchers, who describe their work in the Jan. 1 GEO-PHYSICAL RESEARCH LETTERS.

Shaffer and his colleagues say they were surprised by the amount of polar warming because the moon lies closer to the tropics and should influence this region more than the poles. "We're unsure of the exact mechanism that is causing [the warming]," says Shaffer.

Meteorologists have long attempted to draw connections between the moon and weather on Earth. Two years ago, Balling and Cerveny reported that global temperatures appear to follow the lunar phase, with Earth's average temperature rising by a very slight 0.02°C at the time of a full moon. When they later sifted satellite data by latitude, the researchers found that polar warming is 25 times the global average at the time of a full moon.

The midlatitudes show an opposite response, growing slightly warmer during the new moon and cooler during the full moon.

Although they cannot yet explain the connection between lunar cycle and polar temperature, Shaffer and his coworkers say that the clear polar air may let in more light from the full moon than other parts of the atmosphere do. They also speculate that tidal forces may generate waves in the atmosphere and shift heat around the globe. Alternatively, the tug of the moon on the atmosphere could compress and heat the air at the poles more during a full moon.

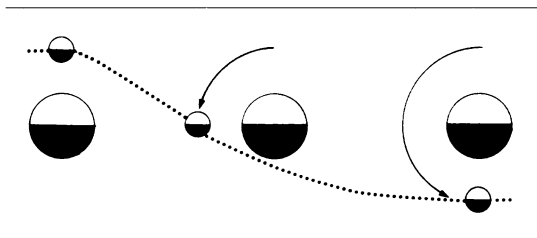
John R. Christy of the University of Alabama, Huntsville, who maintains the data set of satellite measurements, cautions that the effect may be an artifact of the way the satellite measures atmospheric temperatures. If there is some unintended reflection of lunar light off a piece of the spacecraft, the full moon could skew the temperature data, warns Christy, who adds that he sees no evidence of such a problem.

If the moon does warm polar regions significantly, it would present a new puzzle for atmospheric scientists. "The finding would say that the climate system is sensitive in ways that we had not expected it to be," says Christy.

Any explanation of the lunar effect will need to account for why the full moon has an opposite influence on midlatitudes and on polar regions. The Arizona State researchers are also examining satellite measurements of the stratosphere to see if temperatures in this region respond in sync with those in the lower atmosphere.

Some scientists question whether polar temperatures truly swing up and down with the lunar cycle. Thomas R. Karl of the National Climatic Data Center in Asheville, N.C., says he would like to see the finding verified by studies of ground-based temperature measurements.

— R. Monastersky



During a new moon (left), the dark side faces Earth. A half-moon (middle) is visible when the moon has completed one-quarter of its orbit around Earth. A full moon (right) shows its sunlit side to Earth.